



UNITED STATES PATENT AND TRADEMARK OFFICE

KF

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/379,702 | 08/24/1999 | HISASHI OHTANI | 07977/093002 | 1613 |
| 20985 | 7590 | 02/04/2004 | EXAMINER | |
| FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081 | | | LEE, EUGENE | |
| | | ART UNIT | | PAPER NUMBER |
| | | 2815 | | |

DATE MAILED: 02/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/379,702 | OHTANI ET AL. | |
| | Examiner | Art Unit | |
| | Eugene Lee | 2815 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 November 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 45-64 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 45-64 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. 08757112.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) The translation of the foreign language provisional application has been received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

| | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 45 thru 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki 5,315,132 in view of Matsumoto 5,396,084. Yamazaki discloses (see, for example, FIG. 3) a thin film transistor (semiconductor device) comprising a non-single-crystal semiconductor layer (crystalline semiconductor island) 2, substrate 1, source region 5S, drain region 5D, channel region (channel formation region) 5D, gate insulating film 3, and gate electrode 5G. The gate insulating film comprises a first insulating film with a side aligned with a side of the single-crystal semiconductor layer 2. Yamazaki does not disclose a gate insulating film comprising a second insulating film extending beyond an edge of the first insulating film. However, Matsumoto discloses (see, for example, FIG. 1) a thin film semiconductor device comprising a thin film transistor 2 wherein the thin film transistor comprises a gate insulating film (second gate insulating film) 19 that extends all the way across a semiconductor device. In column 4, lines 47-49 and lines 65-68, Matsumoto discloses the gate insulating films may be silicon oxide or silicon nitride. In column 5, lines 28-56, Matsumoto teaches that such an arrangement will increase the on-voltage and suppress the increase in current consumption. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the gate insulating film 19 of Matsumoto to extend all the way across the thin film

transistor in Yamazaki's invention in order to increase the on-voltage and suppress the increase in current consumption.

Regarding claims 60-64, see column 6, line 13 wherein Yamazaki states the substrate as being quartz glass (glass substrate).

Response to Arguments

3. Applicant's arguments filed 11/19/03 have been fully considered but they are not persuasive.

In response to the Applicant's argument (on page 1, third paragraph) that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in any sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the invention was made, and does not include knowledge gleaned only from the Applicant's disclosure, such a reconstruction is proper. In re McLaughlin, 443 F. 2d 1392; 170 USPQ 209 (CCPA 1971).

In this case, Matsumoto clearly discloses (see column 5, lines 21-56 and FIG. 1) that by combining a gate insulating film 19 with gate insulating film 14, one can create a thicker gate insulating film. The thicker gate insulating film increases the distance between the gate electrode and channel region, thereby increasing the on voltage. In column 5, lines 51-56, Matsumoto states that the current consumption will increase. Therefore, Matsumoto provides the motivation needed within the level of ordinary skill at the time the invention that the reconstruction of Yamazaki in view of Matsumoto is proper.

Regarding the applicant's argument on page 2, first paragraph that a thicker insulating film could be obtained by making insulating layer 3 of Yamazaki thicker in the first instance, rather than by employing the additional process step of applying a second insulating film, this argument is not persuasive. Matsumoto teaches (see column 5, lines 21-27) thickening the gate insulating film by including a gate insulating film 19 with a gate insulating film 14. Therefore, by the teaching of Matsumoto, it would have been obvious to one of ordinary skill in the art at the time of invention to thicken the insulating layer by including an additional gate insulating layer.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 703-305-5695. On 2/9/04, the telephone number will be permanently changed to 571-272-1733. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Eugene Lee
January 26, 2004

Tom Thomas
Tom Thomas
Supervisory Patent Examiner
Technology Center 2800